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Japan Report

(FOUO 26/80)



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JAPAN REPORT

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POLITICAL AND SOCIOLOGICAL

JAPAN'S ROLE IN SOUTHEAST ASIA VIEWED

OW221035 Tokyo MAINICHI DAILY NEWS in English 21 Sep 80 p 2

[Editorial: "Japan's Role in Southeast Asia"]

[Text] Japan's relations with ASEAN (The Association of Southeast Asian Nations) has undergone a swift change in the past few years due to persistent shaky and uneasy political situations in Asia, particularly in Southeast Asia.

A Japanese diplomatic initiative designed to further solidify the bilateral relations on the principle of "heart-to-heart talks," promoted by former Prime Minister Takeo Fukuda during his visit to the ASEAN region 3 years ago, was well received.

The growing regional support for the new Japanese diplomatic approach, however, diminished fast in strength, to be replaced with a strong ASEAN call urging Japan to play a more significant political role in the region's endeavor to maintain its security--a call directed at Foreign Minister Masayoshi Ito when he visited Thailand toward the end of last month.

The ASEAN countries, especially Thailand, have become increasingly jittery and apprehensive about a serious and lingering threat posed by Vietnamese forces, which still continue their presence in Cambodia and which penetrated into Thailand last June.

Against this backdrop, at the recent Third Japan-ASEAN Symposium held in Singapore under the sponsorship of the MAINICHI newspapers and the Asian Affairs Research Council, the participating ASEAN panelists voiced various opinions in regard to Japan's possible emergence as a military power.

Many ASEAN panelists shared the view that it is inevitable for Japan to emerge as a military power. A summarizing report adopted on the final day even contained a paragraph which said in effect that all the ASEAN panelists were unanimous in agreement that Japan has the legitimate right to demonstrate its increased independence in the military field.

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Against this, Saburo Okita, the Japanese cochairman of the symposium and the Japanese Government representative for external economic affairs, said Japan will continue to conduct its experiment of being a major economic power with no military strength, and voiced the hope that Japan can contribute to global peace through the success of this experiment.

In the summarizing report, a statement was made to the effect that all the Japanese panelists believed Japan would not follow the path of becoming a major military power.

These views amply illustrate the ASEAN countries' deep sense of danger because of the "vacuum of strength" created by the post-Vietnam war U.S. withdrawal from the region.

However, the ASEAN panelists were split as to their assessments of Japan's becoming a strong military country.

One group outlined the concept of a power balance which they believed would be beneficial of the region. They contended that Japan, if it becomes a strong military nation, would be an important new element in the regional power balance, giving the region greater clout.

The opposing side emphasized its great concern that Japan, if it becomes a strong military nation, could bring great influence to bear on the Asian region and that a longing to see their nation become a superpower could begin eating at the hearts of the Japanese.

Evidently, sentiments the ASEAN countries entertain toward Japan are mixed, as is evidenced by the fact that all the ASEAN panelists subscribed to the idea of attaining "peace, friendship and a neutral zone" in their earnest quest to establish political stability and maintain security in the Southeast Asian region.

Accordingly, Japan's obvious reluctance to become a major military power is justifiable in this respect. Japan should reaffirm its belief that its greatest contribution toward maintaining security in the ASEAN region lies in the area of extending economic cooperation and not in its positive response to a hasty call for a military buildup voiced by some ASEAN panelists.

Of course, Japan should play some political role commensurate with its power in an attempt to solve the Cambodian question which is worrying the ASEAN nations. But the question of "how" is difficult to answer. It may be that Japan should work to convene an international conference to seek a political solution of regional conflicts.

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POLITICAL AND SOCIOLOGICAL

CHANGE IN JAPAN'S POLICY CITED

Tokyo MAINICHI DAILY NEWS in English 7 Sep 80 p 3

["Behind the Scenes" column by Minoru Hirano: "Change in Japan's Policy"]

[Text]

Asian countries look to Japan to play a more positive political role, Foreign Minister Ito told a press conference at the Foreign Ministry upon his return Thursday from a tour of Thailand, Burma, India, Pakistan and China.

He said Japan should not only fulfill such expectations but should also step up its economic aid to the area.

To perform a more active political role in response to the expectations of Asian countries, Japan should shape its strategy and tactics. The "strategy" is to be aligned with the Western camp in order to strengthen the security of this camp. The "tactics" is to support ASEAN and to act in concert with ASEAN. In line with this policy, Ito visited Thailand first on his recent tour, and personally chaired a meeting in Bangkok of Japanese ambassadors to the countries of Southeast Asia. There is a strong probability that also in line with this policy, Prime Minister Suzuki will visit the ASEAN countries next January on his first overseas tour since he became prime minister.

Both the strategy and the tactics evidently signal a policy change from the "omnidirectional foreign policy," which Japan once pursued. During his tour, Ito said that it was good to have a free hand in foreign policy without aligning oneself with any specific country but such an attitude might estrange one's friends.

Omnidirectional foreign policy is an "everybody's friend" attitude. Everybody's friend is nobody's friend.

Moreover, everybody's friend has a strong instinct to look after himself. He wants always to remain unscathed.

A country which tries to be everybody's friend cannot pursue a positive foreign policy.

The recent tour of Asian countries by Ito was not a mere goodwill tour. He acted in line with the said strategy and tactics. When he was told by Thailand that the five ASEAN countries desired Japan to positively support the Pol Pot regime's representation in the UN, he conveyed this desire wherever he went and instructed the Japanese ambassadors to more than 40 countries in the Arab world, Africa and South America to positively maneuver in support of the Pol Pot regime.

In Pakistan, which is directly affected by the Soviet invasion of Afghanistan, Ito expressed the Japanese Government's policy to continue its economic sanctions against the Soviet Union and to step up aid to the countries bordering the disputed area in order to beef up the security of the Western camp. Plans to increase economic aid to Pakistan and extend economic aid to the Cambodian refugees in Thailand and aid to Thailand itself are aimed at containing the Soviet Union.

Japan's own national interest is involved in such positive maneuvers by Foreign Minister Ito. While visiting India, Ito expressed Japan's intention to stand as a candidate for a nonpermanent seat on the UN Security Council for 1981-82. In

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the previous election of nonpermanent members of the council, held in November 1978, Japan failed to obtain support of even half of the 38 Asian countries and was defeated by Bangladesh, the rival candidate in Asia. Ito's recent tour of Asia was, in a way, a precandidacy campaign by Japan for election to the UN Security Council.

It was natural that India, which is on friendly terms with the Soviet Union, responded coldly to Ito's pro-ASEAN attitude and Japan's policy of alignment with the Western camp. India gave no commitment to support Japan in the UN Security Council election.

Foreign Minister Ito's first foreign tour, where he acted as foreign minister of a member country of the Western camp, is also being criticized within Japan for narrowing down the foreign policy options of the government and weakening its position as an international mediator.

However, the strategy and tactics which Japan has hammered out in order to perform its political role will not change. This will become even clearer during Ito's visit to the US from September 18 and his talks with Soviet Foreign Minister Andrei Gromyko during the UN General Assembly.

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POLITICAL AND SOCIOLOGICAL

LDP FACTIONS AWAITING DEVELOPMENTS

Tokyo MAINICHI DAILY NEWS in English 11 Sep 80 p 2

["Nagatacho Doings" column by Takehiko Takahishi: "LDP Faction Awaiting Development"]

[Text]

The Suzuki administration is a whole party cabinet. The movements of various LDP factions can be observed quietly within it. How long this situation will continue is problematical.

Chairman Susumu Nakaido of the LDP's Executive Council is saying that "there is no movement among the factions now, but if the Suzuki cabinet starts to totter, factional movements will begin to appear." Nakaido is said to be in a position representing the Tanaka faction. He himself has a faction within the LDP but seems to believe that now is the time to remain quiet.

At the time the Suzuki administration came into being, the Miki faction called for a disbandment of factions. There are many rumors as to the reason for this. One of them is that "Komoto considered it disadvantageous, in order to win in the party presidential competition, to be a member of the Miki faction. Komoto therefore told Miki that he would like to leave his faction.

If such a thing happened, there was a strong likelihood that most of the members of the Miki faction would leave with Komoto. Miki therefore "saved face" by disbanding his faction."

Although this may not have been the sole reason, it was undoubtedly a potent reason. This is attested to by the later formation of the Komoto faction.

On Sept. 4, members of the former Miki faction who support Komoto held a meeting at the Komoto office. They agreed to form a group for the exchange of information and provide "material and spiritual" support for the collection of political funds, thereby strengthening their solidarity.

Of 40 members of the House of Representatives who belonged to the former Miki faction, 17 attended this meeting. Kinji Moriyama, former transport minister, became the representative caretaker of the group. Probably all the members of the former Miki

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faction will eventually join this group. This means the birth of a new Komoto faction within the LDP.

Prior to the formation of the Komoto faction, a meeting of the Tanaka faction was held. At this time an agreement was reached to support Justice Minister Seisuke Okuno. Although Okuno is outwardly not affiliated with any faction, it is well known that he is close to the Tanaka faction. Because of his statements concerning the Constitution, Justice Minister Okuno has begun to be strongly attacked by the opposition. Since demands are likely to be made for "the justice minister's resignation," the Tanaka faction is countering this and giving support so that Prime Minister Suzuki will not call for Okuno's resignation.

Disbandment

Former Prime Minister Takeo Fukuda has long advocated the disbandment of factions. Nevertheless, the Seiwakai association of the Fukuda faction still retains its office and cabinet ministers who have been appointed from the Fukuda faction call on Fukuda frequently. No factional movements are being carried out but a structure is being maintained so that, as Nikaido has stated, "if the Suzuki cabinet starts to totter," the Fukuda faction can take action at once.

In this way the factions are watching and awaiting developments, but, in the midst of this situation, a movement to establish a new faction is under way. This centers on Shintaro

Ishihara (former director general of the Environment Agency) and the "New Political-Economic Study Society." This society was led at one time by the late Okinori Kaya, former finance minister and justice minister. It has been revived by Ishihara.

The first meeting after the revival was held at the end of August. The representative caretakers are, besides former Prime Minister Fukuda, Shigeo Nagano and Sohei Nakayama.

Kaya was Nagano's senior, both hailing from Hiroshima Prefecture. Nakayama was Ishihara's senior, both being graduates of Hitotsubashi University. Fukuda was the one who appointed Ishihara to head the Environment Agency at the time of the Fukuda cabinet.

Ishihara holds a position equivalent to secretary general in the "Nakagawa group" headed by Ichiro Nakagawa, director general of the Science and Technology Agency. For Ishihara to have boldly established such a political funds association can be looked upon as meaning that positive action will be taken henceforth to form an Ishihara group.

Prime Minister Suzuki regards "harmony" as the basis of politics. As against this, some critics assert that his politics is like that of "a caretaker of a joint building." The occupants of various rooms in this building, namely the factions, seem prepared to agitate at any time, depending on the attitude of the caretaker.

(The writer is an adviser to The Mainichi Newspapers and former chief editorial writer).

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SUZUKI ATTEMPTS TO SILENCE HAWKS

Tokyo THE DAILY YOMIURI in English 8 Sep 80 p 3

[Political Beat column, by Raisuke Honda: "Silencing the Hawks"]

[Text]

Prime Minister Suzuki and other government and Liberal-Democratic Party (LDP) leaders appear perplexed over repeated "hawkish" remarks by Justice Minister Seisuke Okuno regarding the highly sensitive issue of a constitutional revision.

Their embarrassment over the Okuno remarks seems to be related to mounting criticism among the opposition parties for the Suzuki cabinet's "swing to the right."

Among the signs that the opposition and the public regard as the Suzuki administration's "prorightist leanings" are the visit to Yasukuni Shrine made by Premier Suzuki and most of his cabinet members on August 15, the anniversary of the end of the Pacific War, and the government decisions to arm Air Self-Defense Force planes and Maritime Self-Defense Force escort ships with missiles and torpedoes, respectively.

Close aides of the premier are reportedly anxious that such a sequence of events would lead to serious "misunderstanding" by the people of the fundamental policy lines of the Suzuki government, unless it comes out explicitly with its major policy goals.

Apparently in a bid to clear such a "misunderstanding," Suzuki, in making a keynote speech Sunday at an LDP policy study meeting at Hakone, said he had no intention at all of seeking a revision of the war-renouncing constitution.

Apart from the current fuss over the justice minister's remarks calling for amending the constitution, the LDP's platform does make it clear that its goal is

to introduce a new, "independent" constitution to replace the existing charter, which the party says was drawn up under the pressures of the occupation authorities.

It is therefore only natural for any Liberal-Democrat to take a view favoring revision of the constitution.

In fact, most LDP Diet members have been affiliated with the Dietmen's League for the Realization of an Independent Constitution chaired by former prime minister Nobusuke Kishi.

Those LDP members who belonged to the now disbanded faction led by the late premier Masayoshi Ohira, however, were said to be the most "dovish-minded" compared with other LDP members.

Such former senior members of the late Ohira's faction as Chief Cabinet Secretary Kiichi Miyazawa and Foreign Minister Masayoshi Ito have not joined the Dietmen's League for revising the constitution, although Premier Suzuki, who was also a leading member of the same faction, is affiliated with the league.

Therefore, there is no reason why the opposition parties should accuse the Suzuki cabinet of being the "most rightist cabinet" in the history of postwar politics.

The current rash of events that seem to indicate a "tilt to the right" by the LDP is mainly attributable to some LDP leaders sounding off after the landslide victory of the LDP in the last "double" Diet elections.

The problem in this connection is that Premier Suzuki has been unable to show

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effective enough leadership to hold such inadvertent remarks in check.

One former member of the late Ohira's faction says: "The Suzuki cabinet is undoubtedly dovish in character. It is regrettable that the premier is so affable as to allow his cabinet members to make remarks as they like to the extent of incurring unnecessary misunderstanding from the public."

"The premier as well as the chief cabinet secretary should strongly urge the cabinet members to be more careful in speech and behavior," he stressed.

Meanwhile, the faction led by former premier Kakuei Tanaka at its senior members meeting September 3 decided to make utmost efforts lest Justice Minister Okuno, known for his friendly ties with the Tanaka faction, should be forced to resign his post because of his recent remarks.

Indications are that Premier Suzuki would find it virtually impossible to fire Okuno as justice minister as long as the power base of the Suzuki administration is heavily dependent on the strength of the Tanaka faction.

But the premier's right-hand man, Miyazawa, has openly expressed his displeasure at Okuno's remarks, saying: "I cannot understand why he has made it a point to speak out what might well be left unsaid."

Even LDP Secretary-General Yoshio Sakurachi, who himself caused an earlier commotion for his remarks in favor of revising the constitution, including war-renouncing Article 9, is critical of Okuno's remarks as "having gone too far."

Although there is no immediate sign of intraparty strife in the LDP, the lack of leadership of Premier Suzuki, if left as it is, would eventually lead to growing discord in factional relations.

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'YOMIURI' ON MONEY, POLITICS

Tokyo THE DAILY YOMIURI in English 11 Sep 80 p 2

[Editorial: "Money and Politics"]

[Text]

Not only did political donations reach a record high of ¥96,600 million in 1979 but there was a marked increase in the trend of professional organizations contributing to political parties.

The sharp rise in donations reported by the Home Affairs Ministry is obviously due to the fact that there were unified local elections in April of last year and a general election in October. Also, campaign funds were being amassed for the House of Councilors election scheduled for the summer of this year.

The pronounced rise in donations by organizations representing professions or trade is worth noting. These organizations now have become pressure groups in Japanese politics. Such well known organizations such as the Japan Political League of Dentists were again on the list.

However, there were also some new organizations. These included the Political League of Health Insurance Associations, the National Political League of Oil Producers and Dealers, the Japan Political League of Licensed Tax Accountants and the League of Liquor Retailers. These rank high within the top 25 organizations making contributions.

Suspicious Donations

These organizations made contributions to support certain politicians. And we suspect that the organizations expect the politicians to do something for them in return.

For instance, there was discussion last year over whether the Japan Political League of Licensed Tax Accountants made contributions to politicians for the purpose of obtaining their help in revising the Law of Licensed Tax Accountants.

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In recent years, an increasing number of political leagues representing people engaged in the same profession have been set up. This does not necessarily mean that this development will lead to political corruption. However, both the organizations donating funds and the politicians receiving them should practice restraint.

Misuse Of Donations

Another problem is that some politicians use part of the donations for their personal use or even to make fortunes. It most certainly is wrong for politicians to spend these donations to go to cabarets or to buy clothes. Money spent for personal purposes should come from the politicians' own salaries.

Common people have taxes deducted from all the money they receive and pay for their own parties. Politicians should not enjoy special privileges by misusing money donated for campaigns.

After the Watergate scandal, a US law made it obligatory for politicians to disclose the amount of their assets. A similar law should be enacted in Japan.

The Political Funds Regulation Law comes up for revision next January, and some Liberal-Democrats are urging that the ceiling on the amount of political donations be raised. This is wrong. Japan should hold down donations by organizations and encourage political donations by individuals.

(September 11)

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MILITARY

WEAKNESSES IN HOKKAIDO DEFENSE CAUSING CONCERN

Tokyo SHUKAN SHINCHO in Japanese 7 Aug 80 pp 28-32

[Article: "Early Attainment of 'Medium-Term Operations Estimate' Is Not Impossible, But It Is Unrealistic"]

[Text] "If America sneezes, Japan catches cold." This was said to epitomize Japan-U.S. relations in the past. More recently, regarding economic relations, sneezing on the part of America has no longer caused Japan to catch cold. But, economic issues aside, Japan-U.S. relations in other respects have not changed a bit. For example, when the United States broached the subject of an increase in Japan's defense spending, it threw the entire Japanese nation into an immediate uproar. Moreover, in addition to reported U.S. pressures for bolstering defense funds vis-a-vis Japan's GNP, the main thrust of the U.S. request reportedly lies in "the buildup of defense power in Hokkaido."

A certain expert in Japan-U.S. affairs points out that "this is indeed a very serious state of affairs." He continues: "In fact, it is not the first time the United States has expressed misgivings regarding Japan's weakness in its capability for defense of Hokkaido. The American Government has held this notion for some time. But it had kept silent in consideration of the Japanese Government's position. The Americans knew it was taboo for an outside nation to point out Japan's defense conditions in specific terms.

"However, the U.S. attitude changed abruptly following the overwhelming victory by conservative forces in Japan's recent 'double election.' The debate over Japan's strength, which was considered taboo until then, became a majority position within the nation. The U.S. Government approved of the change within Japan and, shifting its position, decided to take the opportunity to make its desires known. The result has been a renewed request for an early increase from 0.9 percent to 1 percent in Japan's defense spending vis-a-vis its GNP (Note: actually expediting the plan by 1 year), as reportedly agreed on by President Carter and the late Prime Minister Chira, and Japan is now faced with the demand that it strengthen its weak defenses in Hokkaido."

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Also, the ratio to the GNP is a major topic carried daily by Japanese newspapers in connection with the problem of Japan's Defense Agency budget for the coming fiscal year. However, for whatever reason, the demand for "strengthening Hokkaido's defenses" is being treated with indifference by the newspapers. The only noteworthy article given space by the papers was a KYODO dispatch from Washington on the 23rd [July] under the caption, "U.S. shares discussions on anti-Soviet defense of maritime transportation."

According to the KYODO dispatch that day, an official of the U.S. Defense Department pointed out to the KYODO TSUSHIN correspondent "the possibility of a landing in Hokkaido by Soviet forces as a hypothetical invasion of Japan."

The dispatch said: "Until now, U.S. Government sources had strictly avoided making any demands on the Japanese Government for a buildup of defense strength, or revealing specific details concerning Japan's defense power, in front of Japanese newsmen. Today, however, a Pentagon official explained that the reasons for Japan's lack of strength to repel a Soviet attack on Hokkaido were 'widely circulated,' and pointed to the lack of stockpiles of ammunition and fuel." (Quoted from the KYODO dispatch in YOMIURI SHIMBUN, 25 July)

A Washington bureau correspondent of KYODO TSUSHIN spoke as follows:

"Since the contents of the article were deliberated upon at the Japan-U.S. security treaty meeting held in Tokyo, it may not be news to high officials of the Japanese Government or to informed officers of the Defense Agency. Nonetheless, despite its wide circulation, this reporter feels that the unprecedented discussion of such specific details by the U.S. official in front of a reporter makes big news. When an exclusive interview was requested, it was not only granted but a venue was set up for the interview. Judging from his attitude, it could be said that the U.S. official spoke with the Japanese public in mind. If it had been merely an expression of a personal view, the official would not have acted so formally. Recently there have been four or five editorials and reports concerning Japan's military strength published in the United States. This clearly indicates an awareness that Japan's internal allergy toward the defense issue has softened and the fact that the U.S. Government has changed its position vis-a-vis Japan."

2,000 Soviet Planes to Japan's 500

Of course, according to the expert on U.S.-Japan foreign relations mentioned before, behind such a shift in the U.S. position lie several reasons, aside from the "favorable change" in Japan's political climate.

"One is probably the deterioration of the U.S. economy and a shift in U.S. world strategy. At present, the major focus of U.S. world strategy is directed, after all, toward the Mideast. That is, it has divided the Seventh Fleet in the Pacific Ocean into two groups and sent one group to

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the western Indian Ocean. It has dispatched the Sixth Fleet, stationed in the Mediterranean Sea, between the Mideast and the Indian Ocean at will. It is surely America's intention that 'we will defend the Mideast, so you (Japan and the European nations) should defend the security of the Far East and Europe.'

"Secondly, if public opinion in Japan is turning hawkish, U.S. public opinion is also hardening to the point where Reagan, a member of the hawk wing, was nominated as the Republican candidate for president. In other words, U.S. public opinion wants Japan and other allies which have achieved economic progress to accept proportionate shares of the defense burden. It could well be that, with such public opinion as the backdrop, the Pentagon has adopted an unprecedented attitude of sternness in pointing to Japan's inadequate defense of the Far East."

Such U.S. pressures toward Japan are naturally being applied through various routes and directed toward the conservative politicians and Defense Agency cadres, and not limited to the mass media. Foreign Minister Masayoshi Ito reportedly demurred against the aggressive pressures by the U.S. side and "is avoiding meeting with high officials of the U.S. Government and the Pentagon."

Of course, the fact that Foreign Minister Ito is "avoiding" them is just a matter of degree. It could be said that the welling up of Japanese public opinion coincides with the U.S. Government's analysis, seemingly responding to U.S. demands for a "strengthening of defenses in Hokkaido."

It is Hokkaido itself which is responding most sensitively to the demands."

"We have even been afraid in the past that, should the Soviet forces invade our land, the United States might not help defend Hokkaido. We were suspicious that, just as the United States once forsook the Philippines during World War II, it might be basically inclined to forsake Hokkaido. If it should come to that, the major premise of the U.S.-Japan security treaty would collapse. But take a look at the American opinion polls. Despite the treaty, only 50 percent support the defense of Japan in the event of a Soviet invasion. In case of a localized attack on Hokkaido, rather than a general invasion of Japan, it is very doubtful whether the United States would seriously consider giving support. Moreover, the U.S. forces in the Far East have been partly diverted to the Mideast and are rapidly dwindling.

"If it cannot count on the United States, Japan must naturally defend Hokkaido by itself. What is the posture of the Japanese Government concerning this? Out of the total personnel of the Self-Defense Forces, one-third are deployed in Hokkaido, and 80 percent of the firepower is deployed there. Therefore it is said that, although 'the northern front is said to be secure,' the inhabitants do not at all feel secure. The command structure for the three branches of service--ground, sea and air--

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of the SDF is not integrated. The Ground Self-Defense Force headquarters is located within the city of Sapporo, but the Air Self-Defense Force headquarters is in Misawa, Aomori Prefecture, instead of in Chitose. The Maritime Self-Defense Force headquarters is in Ominato, Aomori Prefecture. Not only are the various headquarters scattered in all directions, but their chain of command lacks unification to this day. For example, in the case of the ASDF, the headquarters should be in Chitose, with its forward bases in Asahigawa and Obihiro. Isn't the reason for locating the headquarters far to the south in Misawa because Chitose might be vulnerable to a single strike by the Soviet forces? One would think that the government had no intention from the outset of defending Hokkaido. And now, the United States is pointing out the need to strengthen the defenses in Hokkaido. I am all for it." (A military affairs expert living in Sapporo)

If one were to compare the recent expansion of Soviet military power in the Far East with Japan's defense strength, the same expert would probably say, "It won't be a contest at all."

For example, there is a great gap between the 2,000 fighter planes and bombers of the Soviet Far East Air Force and Japan's 500 fighter planes. Moreover, the 500 fighters are deployed throughout Japan, with barely 40 to 50 planes in Hokkaido. As for ground troops, the Soviet Far Eastern Army totals some 300,000 men. Actually, their maximum landing force on Hokkaido would be five divisions, or 55,000 men (a Soviet division consists of 11,000 men). Against them, the GSDF has four divisions or some 32,000 men (a GSDF division consists of 7,000-9,000 men) and some 8,000 members of the tank corps. Assuming that an average division had 8,000 men, an additional two divisions would barely bring Japan's manpower to equal theirs in numbers. On the other hand, the GSDF's firepower is estimated at one-half of the Soviet forces.

The GSDF is still comparatively well off; in the case of the MSDF, it is estimated to be "one-seventh" of the Soviet Far Eastern Fleet.

These figures form the basis for the theory of Osamu Kaihara, chairman of the National Defense Council, and Hiroomi Kurisu, former chairman of the Joint Chiefs of Staffs, who have decided: "If Hokkaido were to be invaded by the Soviet Union, it could hold out for 3 days, or at best for 7 days."

Cost of the Defense of Hokkaido

With all this debate going on concerning the buildup of defense power, one wonders to what level the ratio between Japan's defense force strength and the Soviet forces must be raised in order to secure "the defenses of the northern front." In order to attain this strength, how much spending would be required to maintain a reasonable balance? The military experts in general tend to remain silent regarding such specific questions.

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Of course, regarding the cost of absolutely securing the defense of Hokkaido, it is probably impossible to arrive at the amount without an indication of what constitutes "absolutely safe" defense. It is undoubtedly true, also, that regardless of how much is spent for equipment, without the resolve on the part of the Self-Defense Forces and the nation itself to "defend our motherland ourselves, any debate concerning the buildup of defense strength would be futile." (a military expert)

Nonetheless, one criterion would be "one unit" of defense against "three units" of Soviet aggressors. It is said that, historically, whenever the balance between "one unit" of defense and "three units" of offense is broken, war inevitably results. But, according to military affairs expert Tadao Kuju, "Actually, this was a mere rule of thumb based on the Normandy landing operations by the Allied forces during World War II. Unlike the Normandy coast, Hokkaido is encircled by the Okhotsk Sea, the Pacific Ocean, and the Japan Sea. With a geographical location under which the Soviet forces could invade from any direction, this rule does not apply."

Prefacing his remarks with the words, "I cannot say how much money it would take to make Hokkaido secure," a former defense force general says:

"Of course, it would be great if we had 2,000 fighter planes. But where in the world would we put them? It would mean an additional 1,500 planes. All we can put on a single airbase is 36 planes. In order to increase the number by 1,500 planes, some 40 airfields as well as accommodating facilities would have to be newly constructed. Where would we find such land in Japan? There are also the costs of maintenance, etc.

"I say, therefore, that if the enemy should attack it must be repelled on the sea--or, if that is impossible, at the water's edge to prevent them from landing on Hokkaido. If they do, mere deployment of arms and equipment will not suffice. We must of course consider what is tactically necessary. For example, if it is on land, I don't think it is necessary to purchase tanks. Once the enemy landed, Japanese tanks would be no match against Soviet tanks. In order to stop them before they land, forts must be built in areas where they are likely to land. Long-range firearms, such as surface-to-surface missiles, should be placed there to destroy the enemy forces attempting to land by sea. Also, such craft as torpedo boats would be deployed at sea to prevent the enemy from landing."

Security Available at Cost of Additional 800 Billion Yen

Former Defense Academy commandant Masamichi Inoki says that if the current Defense Agency budget were to be increased by 500 billion yen for equipment costs, 200 billion yen for research and development, and 100 billion yen for other expenditures--a total of 800 billion yen--it would be adequate to cover defense spending not only for Hokkaido but for the entire territory of Japan.

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"I feel that we must consider how much it would cost to defend Japan. One may think that, once such increases are made, we would end up with staggering costs which would be impossible to sustain. Actually, however, the amount would not be so great. While the current Defense Agency budget is 2,230 billion yen, the bulk is allocated to personnel expenses and costs of provisions, and only about 460 billion yen is for equipment. If this were to be doubled, or increased by 500 billion to 1,000 billion yen, the defense capability of the Self-Defense Forces would be improved markedly and, while not perfect, it would make the defense of Japan possible. Such an amount could be easily realized by cutting a small part of public works funds used to pave rural roads along ricefields. It may cost a great sum of money to invade another nation, but it costs very little to defend one's own country. For example, assuming that a fighter plane costs 1 million dollars...an antiaircraft missile could be built for 10,000 dollars. Also, a battleship costing 10 million dollars could be sunk with a single antiship missile costing 10,000 or 20,000 dollars. If surface-to-air missiles, antiship missiles, and antisubmarine missiles could be stocked in mass quantities, they would result in corresponding increases in defense capabilities. The present situation, however, is intolerable."

According to Mr Inoki, among the defense ships of the MSDF today, only "three or four ships" are equipped with antiaircraft missiles. Although Japanese technology has succeeded in developing a new antiship missile, "it has not been produced for combat use owing to lack of funds." Even in the case of the Model-74 tank, which has the most advanced capabilities, budgetary limitations have restricted production to a mere 48 units. Therefore, it reportedly has only a 28-percent share of all tanks.

Mr. Inoki continues: "In order to modernize equipment, certain amounts of research and development funds are necessary. The current annual [R & D] budget is only 225 billion yen. This should be increased tenfold. With other increases up to 100 billion yen included, it would be splendid if a total increase of 800 billion yen could be realized. Since 800 billion yen would be equal to 0.33 percent of Japan's GNP, it would bring the current Defense Agency budget ratio of 0.9 percent vis-avis the GNP up to 1.23 percent, and could be implemented beginning with the coming fiscal year."

The current noisy debate going on a Nagata-cho [in the Diet] involves a proposal to shorten the "medium-term operations estimate" of Japan's defense budget--which is targeted at 1 percent of the GNP in 5 years--to 4 years at the request of the United States. In order to realize this "promise to the United States," Japan must increase its annual budget each year by 15 percent above the previous year, an increase of 335 billion yen. This would mean an expenditure of over 1,000 billion yen in 3 years. It is hoped that defense spending will not become the sorest point of major deficit financing, similar to the 3K deficit, by the time the mounting defense debate simmers down.

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ECONOMIC

'YOMIURI' URGES REALISTIC APPROACH TO JAPAN-PRC ECONOMIC TIES

OW171341 Tokyo THE DAILY YOMIURI in English 16 Sep 80 p 2

[Editorial: "Japan-China Economic Ties"]

[Text] Two unexpected developments have taken place in the Japan-China economic field. One is the Chinese decision to cut its crude oil supplies to Japan from the target set under the private long-term agreement and the other is the growing criticism in China of technological assistance extended by Japan to facilitate the construction of the Bao Shan Steel Mill.

China had promised to supply 9.5 million tons of crude to Japan in 1981 and 15 million tons in 1982. But the Chinese authorities told a Japanese business mission in Beijing last week that China will not be able to supply more than 8.3 million tons of oil in both years and sought Japan's understanding.

In view of Japan's supply and demand situation in energy, it is not a matter to make much fuss about. Although the Chinese proposal came as a big surprise, we have no choice but to accept it because economic plans worked by China around 1978 were all a little too farfetched.

The Chinese decision will have a considerable effect on its trade with Japan. China had planned to promote its modernization with foreign currencies earned through its export of oil, whose price has been increased sharply. The export of oil took an extremely important role in China's modernization policy.

But now China has decided to slash its oil production or keep it at the present level. We think China should make a scientific analysis of reasons for this sluggishness in oil production and work out proper measures to increase the output.

Reliance On Oil Exports

It will be a plus for China if it abandons its reliance on high-priced oil and instead steadily promotes exports of light industrial goods. Of course, China will have to exert tremendous efforts in this field as well as in the development of energy.

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Many Japanese who have a sympathetic feeling for China feel bitter on hearing criticism in China of the Baoshan Steel project. It is unpleasant to hear statements like "Japan sold China ultramodern facilities which are beyond the expertise of Chinese by taking advantage of China's innocence" and "the Baoshan project is an excess baggage for China."

We understand the project was decided upon to meet China's modernization hopes and it was clear from the beginning that such a big project would become a burden for China. But China can achieve its modernization goals only if it is able to bear such a burden.

Realistic Approach

A "Chinese boom" that took hold in Japan around 1978 was mainly due to the misunderstanding on the part of Japan that China's modernization projects could be carried out at a breathtaking speed. Japan should have evaluated Chinese plans coolly and realistically as it did in the case of economic cooperation with many developing countries.

China's new premier, Zhao Ziyang, has shown his ability in propping up the country's agriculture and industrial production. His success was due to his policy based on reality. We hope Zhao will display the same pragmatic approach in steadily promoting the Japan-China economic cooperation.

A bilateral relationship based only on enthusiastic exchanges of greetings will achieve nothing. It is necessary to create an environment to solve economic problems in a businesslike manner.

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ECONOMIC

EFFORTS AIMED AT BOLSTERING ECONOMY WELCOMED

Tokyo THE DAILY YOMIURI in English 6 Sep 80 p 2

[Editorial: "Priming the Economy"]

[Text]

The government at Friday's meeting of economic affairs ministers adopted an eight-point economic package aimed at bolstering the economy while seeking to stabilize prices.

The package calls for a 30 percent increase in public works contracts in the October-December term compared with the same period last year. This is the only noteworthy measure in an otherwise poor package of economic pump-priming measures.

We hope appropriate measures will be taken to stabilize prices. At the same time, we hope that the promotion of public works will not trigger price increases in construction materials, thereby raising prices in other fields.

The promotion of public works set forth as the government's main pillar in bolstering the economy reflects the latest business trend characterized by production cutbacks and slack personal consumption.

Inappropriate Haste

The Liberal-Democratic Party (LDP), under strong pressure from the construction industry and related interests, is pressing the government to complete the projected public works within this fiscal year.

But considering the current tight money situation and the effect the public works projects will have in pushing up prices, it seems inappropriate to complete the public works within this fiscal year.

The most that can be done is to increase public works contracts by 30 percent during the October-December period.

With the state itself facing financial difficulties, it is inappropriate to force the government to spend

more on public works at this time. The business community should give up such indulgent thinking that the government will act as it asks.

It is necessary to give careful thought to these public works projects in order to derive the most benefit from them in the current stringent financial situation.

We applaud the government's plans to award more contracts to minor construction companies and such regions as Hokkaido and Tohoku where there has been a lack of public works projects.

Watch Price Increases

What we are concerned about is an increase in prices of such construction materials as small steel bars, taking advantage of the increase in demand.

The economic package stresses that proper measures will be taken to check price trends and reject any price increases which take advantage of the business stimulation policy.

We hope the ministries and agencies concerned will communicate closely to see that speculative price increases are curbed.

Toshio Komoto, director-general of the Economic Planning Agency (EPA), said that price control is the best measure to bolster business. We quite agree.

The current business slowdown is becoming more serious due to slumping personal consumption, which accounts for about 60 percent of the gross national product (GNP).

The business slump has been aggravated by consumers keeping their purses tightly closed in view of price increases.

What we wish the government to do is to take effective measures against price increases. Successful price control is sure to work as the best motive power to stimulate business.

(September 6)

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ECONOMIC

FINANCE MINISTRY CONSIDERING MEASURES TO SUPPORT YEN

OW121555 Tokyo JIJI in English 1432 GMT 12 Sep 80

[Text] Tokyo, Sep 12 (JIJI PRESS)--The finance ministry decided Friday to substantially relax measures for expediting inflow and curbing outflow of foreign capital, enforced last year to stop the yen's depreciation against the U.S. dollar.

This stems from the belief that the trend of the Japanese currency's appreciation has taken firm root in the foreign exchange market here in recent weeks.

The ministry will consider specific measures from early next week, which are likely to include (1) raise of ceiling on nonresidents' flotation of yen-denominated foreign bonds, (2) lifting of a ban on extension abroad of yen-denominated syndicated loans and (3) partial restrictions on the introduction of impact loans.

Details will be worked out by the end of October.

The yen has been following an uptrend on the Tokyo foreign exchange market since late last month. On Friday, it surged to the 213-yen months and a half. [as received]

The upswing, ministry officials explained, reflects an improvement in the Japanese economy's "fundamentals" such as the international balance of payments and wholesale prices.

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SCIENCE AND TECHNOLOGY

DEVELOPMENT OF VLSI IN JAPAN FOLLOWED

Tokyo JOURNAL OF THE INSTITUTE OF ELECTRONICS AND COMMUNICATION ENGINEERS OF JAPAN in Japanese Vol 63 No 4, May 80 pp 431-434

[Text] High Performance Apparatus for Submicron Pattern Use Developed: VLSI Nearing Completion

The Joint Research Institute of the VLSI Technical Research and Development Association developed a high performance electronic beam high-speed lithography machine and an electronic beam mask test apparatus, both suited for producing the submicron pattern, and at the same time achieved success in tests with the electronic beam copying method.

The electronic beam lithography machine employs a new lithographing method with the following special characteristics and functions in order to attain high-speed lithography:

1. A variable dimension beam that can have the measurement of one side of an electronic beam changed up to a maximum of 4 μm .
2. A beam that can scan to a 250 μm width in a fixed direction.
3. Built so as to enable the high-accuracy copyholder to move continuously at an optimum speed of up to a maximum of 100 mm/s in the beam's scanning direction and at right angle.

As a result, it has achieved lithographing speed of 8 $\text{cm}^2/\text{minute}$ which is about 10 times that of the raster scan type lithographing machine that was previously described; and in the case of a 125 mm square mask, it can lithograph in 12 minutes a pattern which includes a line width of 1 μm , and it can combine with circuit pattern lithography of very large scale integration at 5 million patterns/ cm^2 to lithograph directly with an accuracy of 0.2 μm . Besides these, (Lechikuru) lithography is possible and it is equipped with such functions as negative/positive reversal, mirror reversal, scaling, resizing, etc.

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The mask test apparatus made it possible with the use of the electronic beam to conduct the high-speed, high-accuracy dimension test of VLSI mask with submicron line width, which was heretofore difficult when conducted with the light application method. The advantages of this apparatus are that with the thin beam, minute dimensions can be measured with high accuracy; with the electronic beam, control is easy because registration and scanning can be electrically performed; high-speed, high-accuracy tests can be performed and others. The system design has adopted the technology of the scanning type electronic microscope. Some of the outstanding features include having a part of the image that should be tested on the mask indicated on the TV of the operator console, then while observing the image, the test conditions can be established and the instructions from the operator console are readily available; and automatic testing can be performed with system control by minicomputers. The performance specifications are listed below:

Performance Specifications of the Mask Test Apparatus

<u>Items</u>	<u>Performance Specifications</u>
Minimum measuring pattern width	0.5 μm
Test pattern count	max. 25,000 points
Pattern width test recall accuracy	$\pm 0.03 \mu\text{m}$ (3σ)
Pattern coordinates test recall accuracy	$\pm 0.2 \mu\text{m}$ (3σ)
Pattern width test time	4" mask (10,000 points)/h
Chip array test chip count	max. 1,000 chips
" " " recall accuracy	$\pm 0.2 \mu\text{m}$ (3σ)
" " " time	4" mask (1,000 mark)/h
Mask size	max. 5 inch square

The copying unit, which was test manufactured to conduct evaluation tests of the electronic beam batch copying method, is a machine that accelerates, in the electric field, the photoelectrons that have been emitted from the masks after being (?spotlighted) by ultraviolet rays from the mask of the quartz base that has been coated with CsI on a photoelectric surface, and it can print out patterns that have been etched on the wafers with the focusing magnetic field. The outstanding features of this machine are that it utilizes the (Herumhorutsu) type superconductive coil in the formation of the focusing magnetic field and it utilizes the newly developed high-output, low-pressure mercury lamp as the (?spotlighting) light

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source, and as a result it has achieved the outstanding special characteristic of copying at the image dissecting rate of 1 second/wafer. This method has confirmed the fact that it is a leader in high-speed, high-accuracy copying of submicron patterns.

These various apparatus have further raised the processing capabilities of submicron technology which includes the subject of VLSI high accuracy apparatus.

Test Performances of Various Large Capacity LSI Memory Units Successive Announcements Made at ISSCC '80

At the ISSCC '80 held at San Francisco from 13 to 15 February [1980], the announcements of large capacity LSI memory units were successively made, as follows: the 4 Mbit full wafer ROM by the Electrical Communication Laboratory [ECL] of the Nippon Telegraph and Telephone Public Corporation [NTTPC]; the 256 Kbit dynamic RAM by the ECL and the Nichiden Toshiba Information System [NTIS]; and the 64 Kbit static RAM by the Matsushita Electrical Industrial Co, Ltd [MEIC].

(1) 4 Mbit Full Wafer ROM

The ECL of the NTTPC on this occasion succeeded in its trial manufacture of the full wafer ROM of its 4 Mbit memory capacity that can accommodate about 15,000 characters (18 x 16 dot characters) on a 3-inch wafer. The ROM was designed specially as a memory unit for Chinese-character pattern occurrence, and it has an easy-to-use structure for, among other things, it can have outputs of Font information like Chinese characters, kana, alphameric codes, etc, through inputs of JIS Chinese-character codes.

With this type of full wafer LSI, from the standpoint of manufacturing yield, an allowable tolerance technology is indispensable. This ROM has memory cells with complete double redundant structure as its foundation, and by employing a new method based on circuit structure, defects can be automatically detected and erroneous information automatically corrected.

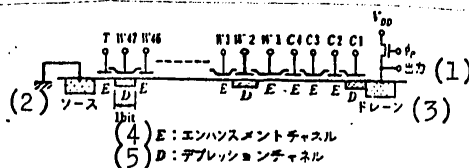


Figure 1. ROM Cell (4 Mbit Full Wafer ROM)

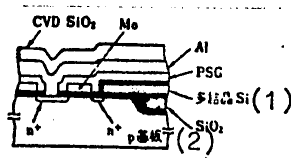
Key: (1) Power output (4) E: enhancement channel
(2) Source (5) D: depression channel
(3) Drain

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(2) 256 Kbit Dynamic RAM

1. The ECL achieved independent technologies such as the NMOS technology of using molybdenum and the multicrystal silicon in two layers, the μm processing technology that includes electronic beam direct lithography, dry etching, etc, a circuit designed technology that can derive high performance with low power consumption, etc, and then trial manufactured the 256 Kbit Dynamic RAM. In this RAM, to gain high speed conversion molybdenum is used for the word line and aluminum for the bit line. (See Figure 2).



Key: (1) Multicrystal silicon (2) Foundation

Because this RAM utilizes a redundant structure (4 each of the bit line and word line are installed in reserve), the faulty bit can be replaced by the reserve bit. This replacement is performed by the new PROM which is built with high resistance multicrystal silicon. And as a soft error

measure for the a-line, a voltage greater than V_{DD} (45V) is applied to the memory condenser of the memory cell thereby increasing the stored capacity. This voltage is sent from above the chips.

The dimensions of the chips of the test manufactured RAM are 5.83 x 5.9 mm and the access time, 100 ns. It operates on 5 V single power source and its power consumption is operating time of 230 mW (cycle time 200 ns) and a standby time of 15 mW.

2. The NTIS utilized the photocopying technology based on the 1.5 μ m rule and it trial manufactured the 256 Kbit Dynamic RAM with the addition of the standard 16 pin DIP. In order to achieve a minimum pattern dimension of 1.5 μ m, the photomask was made by electronic beam exposure method and a 10:1 step-and-repeat type reduced projection apparatus is used for copying on the wafer. The special features of the memory cell structure are the use of a 2-layer silicon gate structure, use of a second layer of multicrystal silicon for the transfer gate and bit line, and the use of aluminum for the word line. In this arrangement, with the exception of the contact section of the bit line and transfer gate section, the entire surface is covered over with the first layer of multicrystal silicon and this is grounded. This serves not only as the electrode for the memory condenser, but it has the function of preventing the influences of the dynamic noises, that come from the excess current flowing into the foundation, from appearing on the bit lines.

As an a-line measure, it is designed to be free of soft error if the incident a-particle is kept down to one, dependent on the oxidized membrane of the memory condenser section of the memory cell being thinned down to 20 nm, by making the storage capacity to 0.035 pF, by making the unit similar to the 64 Kbit RAM as well as other reasons.

The dimensions of the memory cell of this RAM are 5.7 x 12.5 μ m and the chip dimensions 4.84 x 8.59 mm. It operates on 5 V single power source; the access time 160 ns; the power consumption is operating time of 225 mW (cycle time 350 ns) and the standby time 25 mW.

(3) 64 Kbit Static RAM

The MEIC on this occasion succeeded in the trial manufacture of the 64 Kbit Static RAM which utilizes the 2-layer multicrystal silicon technology and the CMOS peripheral circuit technology. The key point in the realization of the large capacity static RAM lies in preventing increases in chip size and in power consumption.

In order to make the area of the memory cell small with this RAM, the second layer multicrystal silicon is used as the resistance load, and extremely small memory cells with dimensions of 16 x 19 μ m under the 2 μ m have been manufactured. And in order to control power consumption, the

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peripheral circuit on the chip is made of CMOS. (See Figure 3). The adaptability of the present NMOS process is being considered, and unlike the conventional, the reverse n-type weld is being used.

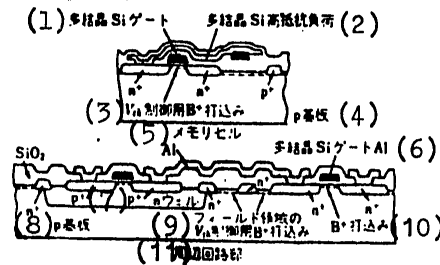


Figure 3. Memory Cell and Peripheral Circuit Section
(64 Kbit Static RAM)

Key:

- | | |
|---|--|
| (1) Multicrystal silicon gate | (7) n weld |
| (2) Multicrystal silicon high resistance load | (8) p foundation |
| (3) V_{th} control use B^+ driving | (9) V_{th} control use B^+ driving of the field zone |
| (4) p foundation | (10) B^+ driving |
| (5) memory cell | (11) Peripheral circuit section |
| (6) Multicrystal silicon gate aluminum | |

Because the load current of the memory cell is 0.2 μA which is comparatively high, soft error from the a-line rarely occurs. The trial manufactured RAM has a structure of 8 K word x 8 bit and is suited as a microprocessing system. The chip dimensions are 5.44 x 5.8 mm and the access time is 80 ns. The power consumption is operating time of 300 mW and standby time 75 mW.

Development of LSI for CODEC Use

Adoption of Various Apparatus for Digital Communications Facilities Anticipated in the Future

Japan has developed 3 types of LSI for CODEC-use and their announcements were made at the ISSCC '80, held in San Francisco, U.S., from 13 to 15 February. Hitherto, Japan hardly made any announcements on LSI for CODEC-use and her developments were watched, but with these announcements it is clear that Japan's technology is now abreast with that of the United States.

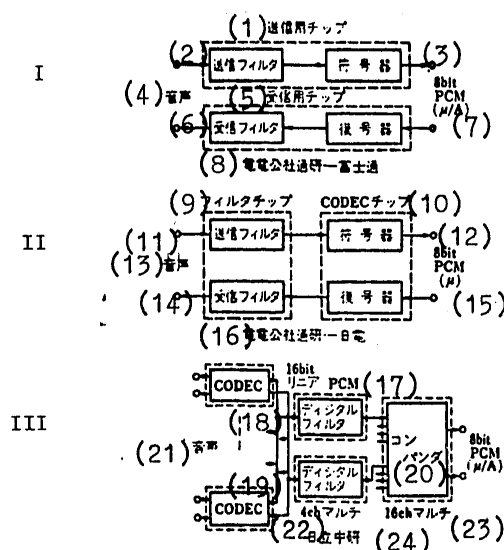


Figure 4. Three Types of LSI for CODEC Use

Key:

- | | |
|-------------------------------|---|
| (1) Transmission chip | (13) Voice sounds |
| (2) Transmission filter | (14) Receiver filter |
| (3) Encoder | (15) Decoder |
| (4) Voice sound | (16) ECL of NTPPC-Nippon Electric Co, Ltd |
| (5) Receiver chip | (17) Linear PCM |
| (6) Receiver filter | (18) Digital filter |
| (7) Decoder | (19) " " |
| (8) ECL of NTPPC-Fujitsu, Ltd | (20) Compandor |
| (9) Filter chip | (21) Voice sounds |
| (10) CODEC chip | (22) 4 ch multi |
| (11) Transmission filter | (23) 16 ch multi |
| (12) Encoder | (24) Hitachi, Ltd |

The LSI jointly developed by the ECL of the NTPPC and Fujitsu, Ltd, consists of transmission-use chips that include transmission filters and encoders, and receiver chips that include receiver filters and decoders. (See I on Figure 4). It was designed to eliminate crosstalk between transmission and receiving, and primarily for easy handling with the actual image. Filters used are the 5-stage LPF and the 3-stage HPF for transmission and the 5-stage LPF for receiving, both based on the switching capacitor technology. The encoder is the serial comparative type which utilizes the nonlinear type D-A transducer, based on the capacity array and on resistance storing, and its principal component is the auto-zero circuit for offset voltage adjustment. The decoder also uses the

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same type D-A transducer. The internal working clock can use either the 128 kHz, 1.544 MHz or the 2.048 MHz. The process is the aluminum gate CMOS, the 2-chip power consumption is 130 mW and the power-down time is 15 mW.

The LSI developed jointly by the ECL of the NTTPC and the Nippon Electric Co, Ltd, is of the general type, built with encoder/decoder chips and 2-channel filter chips, but in comparison with LSI of the past, its emphasis was placed on converting to substantially low power use. (See II on Figure 4.) The coding system, like that described above, is of the serial comparative type based on the D-A transducer which uses capacity array and resistance storing; likewise the decoder has a separate D-A built in. The filter utilizes the switching capacitor technology and is built in with 5-stage LPF and 2-stage HPF for transmission and 5-stage LPF for receiver use. In order to generate from the 8 kHz sampling signal to the 128 kHz filter-use clock, the PLL is built in separately for transmission and receiving. The process is silicon gate CMOS and the power consumption is small, or 68 mW (CODEC 18 mW, filter 50 mW). These results were achieved because of the feedback circuit design of the amplifier which is suited for reducing the analog circuit structure and changing to low power use.

The LSI developed by the Central Research Laboratory of the Hitachi, Ltd, is designed with the three chips of CODEC, digital filter and compandor, a combination which is unusual and not seen elsewhere. (See III on Figure 4.) The CODEC is a system that converts a 1-channel voice sound to a 16-bit linear PCM of 32 kHz sample and it is realized through an interpolative transducer system. The digital filter is a cyclic type 5-stage filter designed with ROM, shift register and an accumulator, and it has an 87 dB dynamic range with a 16-bit word length. It is possible for this LSI to conduct 4-channel multiple processing. Having the function to convert linear PCM to pressure PCM, the compandor chips can perform 16-channel multiplexing operations. Hence, the 16-channel system can be built with CODEC 16 chips, filter 8 chips and compandor 1 chip, and the number of chips per channel would be 1.56; its outstanding feature is having less than 2 chips which today is the general practice. CODEC is made by I²L process while the filter and compandor are made by NMOS process.

These three types of LSI for CODEC-use are constructed with different structures, but all of them are excellent with their specialties and are fulfilling their requirements. They can be applied to the subscribers' circuit of the digital municipal switching equipment, the PCM transmission end office, etc, and it is felt that in the future they will be extremely useful LSI as digital communications network apparatus.

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Development of NEA Cold Electron Released Element

Power Consumption Is 1/1,600 of Hot Cathode, 5.5 Percent Efficiency

The Hamamatsu TV Co succeeded in developing for practical application the cold cathode utilizing the Negative Electron Affinity of the negative ion. The company had been commissioned by the Research Development Corporation of Japan and it had pursued development for practical application, utilizing as basis the results of the Electronics Engineering Research Institute of Shizuoka University.

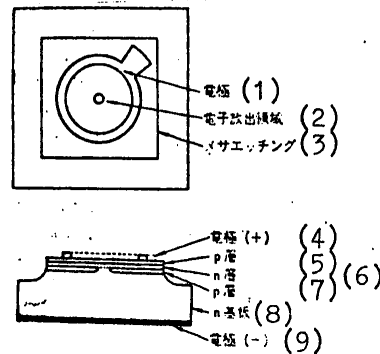


Figure 1. GnP Cold Electron Release Element and Its Structure
(Electron Release Zone 20-40 $\mu\text{m}\phi$)

Key:

- | | |
|---------------------------|------------------|
| (1) Electrode | (5) p layer |
| (2) Electron release zone | (6) n layer |
| (3) (mesa) etching | (7) p layer |
| (4) Electrode | (8) n foundation |
| | (9) Electrode |

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END